

Contents lists available at [ScienceDirect](https://www.sciencedirect.com)

Vaccine

journal homepage: www.elsevier.com/locate/vaccine

Neighborhood political composition and personal belief exemptions from immunization requirements in California Kindergartens, 2000–2015

Kevin A. Estep*

Health Administration and Policy Program, Department of Cultural and Social Studies, Creighton University, Omaha, NE, United States

ARTICLE INFO

Article history:

Received 30 October 2017

Received in revised form 25 May 2018

Accepted 28 May 2018

Available online xxx

Keywords:

Personal belief exemptions
School-based vaccination requirements

Immunization laws

Political ideology

Political polarization

ABSTRACT

Introduction: The growing proportion of parents filing personal belief exemptions (PBEs) from school-based vaccine requirements, and the clustering of PBEs in particular schools and communities, could weaken herd immunity and increase vaccine-preventable disease. Alignment of vaccine opposition with a particular political party or ideology could substantially increase PBEs. This study extends our understanding of the link between vaccine refusal and politics by identifying longitudinal associations between neighborhood political composition and school-level prevalence of PBEs between 2000 and 2015 in California.

Methods: California Department of Public Health data on PBEs in kindergartens were matched with political party registration and voting data from the California Statewide Database. Variables for partisan composition and for conservative political ideology, as well as school and neighborhood controls, were used to estimate both mixed-effects and fixed-effects regression models.

Results: PBE rates increased more rapidly in schools located in highly Republican neighborhoods, and were three times higher than PBE rates in highly Democratic neighborhoods in 2013 (6.6% compared to 2.2%). Mixed-effects models predict a 2.3 percentage-point increase in PBEs between 2007 and 2013 for schools in neighborhoods one standard deviation above the mean for % Republican (59%), compared to a 0.8-point increase for schools in neighborhoods one standard deviation below the mean (24% Republican). Similar results were obtained when using a measure of neighborhood conservatism and when models were estimated using fixed effects.

Conclusions: Results indicate growing opposition to mandatory vaccinations in Republican/conservative neighborhoods, which could increase PBE clustering and increase the likelihood for outbreaks of disease in areas where conservative values are widely shared.

© 2018 Elsevier Ltd. All rights reserved.

1. Introduction

School-based immunization requirements are a crucial intervention to prevent the spread of contagious diseases. However, the growing proportion of parents filing personal belief exemptions (PBEs) from these vaccine requirements, and the clustering of PBEs in particular schools and communities, could weaken herd immunity and increase outbreaks of disease [1–3]. An alignment of vaccine opposition with a particular political party or ideology could substantially increase PBEs, because parents could be more likely to evaluate objective evidence about vaccine safety through

the lens of their political identities [4–6]. The relationship between vaccine refusal rates and partisanship is therefore a potential concern for providers, policymakers, and public health officials.

The current study extends our understanding of the link between vaccine refusal and politics by analyzing longitudinal associations between school-level PBE rates and the political composition of census tracts (referred to hereafter as “neighborhoods”) in which schools are located. Importantly, the analysis examines whether this relationship has changed over the course of a period characterized by increasing partisan polarization on a range of other issues.

Several cross-sectional studies have examined the impact of individual political identity on vaccine attitudes. Although vaccine opposition does occur on both sides of the political spectrum [7,8], recent studies have found that political conservatives are more

* Address: 2500 California Plaza, Creighton Hall, 425A, Omaha, NE 68178, United States.

E-mail address: kevinestep@creighton.edu

<https://doi.org/10.1016/j.vaccine.2018.05.108>

0264-410X/© 2018 Elsevier Ltd. All rights reserved.

opposed to new vaccines [4,9] and that supporters of the Tea Party (a prominent, conservative voice in contemporary U.S. politics) were less likely to trust scientists as a source of information about vaccines [10]. Moreover, arguments against mandatory vaccination resonate with conservative, “free-market” ideologies that foster suspicion of state intrusion into the private lives of citizens [8,9]. These factors could lead to higher rates of vaccine refusal in Republican/conservative neighborhoods, where parents are more likely to espouse such beliefs.

Additionally, the political context in which vaccine decisions are made could compound the impact of individual political beliefs. Research on the contextual predictors of PBEs has found that features of schools and their immediate surroundings can increase or decrease normative pressures to vaccinate [11,12], and provide more or fewer obstacles to obtaining exemptions from school administrators [13–15]. Political context could impact PBEs through similar mechanisms.

First, parents might feel less normative pressure to vaccinate in politically conservative settings, where shared commitment to individual rights (in this case, parental rights) could overshadow perceived obligations to contribute to collective goods like community health [16]. In such contexts, parents who opt out could be less likely to feel stigmatized as “free riders” by health care providers or neighboring parents [17]. Second, this emphasis on parental rights and “free market” individualism in conservative communities could prompt school administrators to take a laissez-faire approach to vaccine enforcement. Administrators might, themselves, see required immunizations as an infringement on parental rights, or they might simply wish to avoid confrontations with parents who do. In either case, looser enforcement could make it easier to opt out [13–15]. In sum, individual conservative beliefs could incline some parents toward opting out, while being surrounded by others who share those beliefs could make it easier to act on their preferences.

Taking advantage of California’s exceptionally detailed data on both PBEs and party registration/voting, this study is the first to examine the relationship between vaccine refusal and neighborhood political composition. Although PBEs are no longer available in California—due to a measles outbreak and subsequent passage of SB 277 in 2015—findings can inform our understanding of future ideologically driven ambivalence about childhood vaccination, especially in the 17 states that still allow PBEs and in dozens of others currently debating these policies.

2. Methods

California public kindergartens were the primary units of analysis. Public schools were used because key control variables for private schools were not available, and because the composition of public schools more closely resembles the surrounding neighborhood. Following existing research on PBEs [18–20], school addresses obtained from National Center for Educational Statistics (NCES) data were geocoded using ArcGIS (ESRI, Redlands, CA) and matched to corresponding census tracts based on TIGER/Line shapefiles provided by the U.S. Census Bureau. The resulting dataset consisted of schools nested within tracts, with both school- and tract-level variables measured longitudinally between 2000 and 2015. The final dataset included 6348 schools with 77,244 school-year observations.

2.1. Measurement

The main outcome of interest was the percentage of students in kindergartens receiving PBEs (mean = 2.2; SD = 5.5; range = 0–92), reported annually by the California Department of Public Health.

Aggregate measures of voting/registration at small spatial scales are very rare. Fortunately, Berkeley Law’s Statewide Database provides data on party registration and electoral results for all California electoral precincts (approximately the voter population for a single polling location) for each election during the study period. Importantly, geographic conversion files provided by the Statewide Database were used to convert precinct data into political composition variables measured at the level of census tracts (2000 geographic boundaries used for tract-level variables in all panels). The key independent variable in the analysis, % registered Republican, represents the number of Republican registrations in a census tract divided by total Republican and Democrat registrations in the tract (multiplied by 100). Constructing this variable as the proportion of total registrations (rather than the two-party totals) did not meaningfully alter results.

As a secondary indicator of neighborhood political composition, a conservatism variable was generated using voting results from 45 state propositions that appeared on the four general-election ballots during the study period (technical documentation for this variable is available in the online appendix). As expected conservatism and % Republican are highly correlated ($r = 0.91$). To avoid multicollinearity, coefficients for these two variables were estimated in separate models.

Data from the NCES were used to account for school characteristics that have been shown to be significant predictors of PBEs [11,19,20]. Specifically, models included control variables for % eligible for free or reduced lunch, % white students, charter school, and total enrollment. All school variables were measured annually, except the dichotomous indicator for charter school, which is constant.

Tract-level correlates of PBEs identified in previous research were also included as control variables [18–20]. Data from the 2000 decennial census (for 2000–2006 panels) and American Community Survey (ACS) 5-year estimates (for 2007–2015 panels) were used to create longitudinal measures for population density (1000 residents per square mile, logged), % college educated, median household income (in \$1000s), racial heterogeneity (calculated as $1 - \text{sum of squared racial group proportions}$), and average household size. Preliminary analyses revealed three additional covariates not listed in previous studies but which are significantly correlated with PBEs: % households that are families, % in the labor force, and % women in the labor force. These were also included.

The census and the Statewide Database did not collect new demographic and political data annually during the study period. Political registration data, for instance, were available for general- and mid-term election years, and the census did not collect new tract-level data between the 2000 decennial census and the beginning of the ACS in 2005. For years in which no new data were available, data from the previous panel year were used (e.g., % Republican in 2001 is taken from 2000 registration records). In a supplementary analysis, extrapolated values were used for missing panel years (e.g., % Republican in 2001 is half the difference between 2000 and 2002 registrations), and consistent results were obtained.

Appendix Table S1 displays descriptive statistics for all variables.

2.2. Statistical analysis

Summary statistics were used to determine if PBE rates in Republican and Democratic neighborhoods differed, and whether this difference widened over time. Next, mixed-effects linear regression models were estimated (using Stata 15) to test if those general patterns persist when controlling for school and neighborhood characteristics. Because years (observations) are nested within schools, which are nested within tracts, a three-level mixed

Download English Version:

<https://daneshyari.com/en/article/8485502>

Download Persian Version:

<https://daneshyari.com/article/8485502>

[Daneshyari.com](https://daneshyari.com)